

Internet Governance: A perpetual “threat”

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8/3/2016

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Preview

“The Internet” – international,
interconnected data networks

No one governs “The Internet”
Some in-country regulations

And that does not make any sense
(to governments, to carriers, to the ITU)

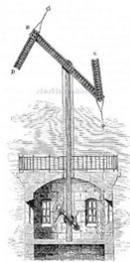
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History & State of Telecom Governance

It all started with the telegraph

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Long Distance Communication – P1



1793

WHAT HATH GOD WROUGHT



1844



1858

By 1875: 650,000 mile telegraph network
Interconnecting 20,000 towns & cities - world-wide

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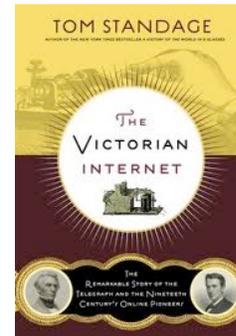
Telegraph System Architecture

State-owned or state-licensed providers confined to a state (country)

Approved services

Revenue source for state

Bilateral cross-border interconnect agreements



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Telegraph Regulations



Europe in 1865

1865: 20 European governments gathered in Paris

International Telegraph Conference ->

International Telegraph Convention (ITC) ->

International Telegraph Union (ITU)

6

ITC 1865

Tariffs & settlements

Technical standards (almost none)

Retention requirement

Complaint process

...



Requirements included protecting state & morality

Requirement for operator to be able to stop messages that *“may appear dangerous to the safety of the State or which would be contrary to the laws of the country, public order or morality”*

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Communications Governance V1

Governance by governments

Empowered state regulators

More than just technology

Also protect state, money & morality

Interconnection under ITC rules

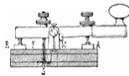
Westphalian ideal?



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ITU

1934: International Telegraph Union ->
International Telecommunication Union



1865



1885



1906



1934



1949

because ITU “covered all forms of wireline
and wireless communication”

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Telephone System Until 1980s

State-owned or state-licensed providers

Confined to a state

Significant revenue source for states

Decade long planning cycles

Circuit-based “intelligent network”

Services provided by carrier

Approved services

QoS & security “guaranteed” by design

Interconnection under ITU rules



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Regulation Evolved Because

Local Monopolies – need to protect consumer

Tariffs – money flow across interconnections

Quality – assumption of required minimum quality

Interconnection – more than technical issues

Numbering (naming) – political for country
determination

...

i.e., regulation was needed!



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The Telecom Regulators

International: International Telecommunications Union (ITU)

Of governments, by governments, for governments

Produces recommendations (standards)

Technical, economic, operations, law enforcement

U.S.: Federal Communications Commission (FCC)

Of the U.S. government, ...

Produces regulations

Technical, economic, operations, law enforcement

Governments (of course) represent constituents

But who are the constituents? (the incumbents?)

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The Internet

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The Internet

Started (for real) 1 Jan 1983

Packet-based stupid network

Overlay on top of existing (e.g., telephone) networks

Uses “best effort” delivery (no guarantees)

Technology: end-to-end

- Services not controlled by carriers

Long ignored by incumbent carriers & regulators

- Even though carriers used technology themselves

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Internet Architecture

Interconnected independent networks

Pair-wise interconnection decisions

No central planning or interconnection regulations

No central control & little coordination are required

Protocol parameters

Fields in protocols that need to be in sync

Bulk IP address assignments

Actual assignments & assignment policy done regionally

Maintain DNS root zone file

Set of pointers to servers for TLDs (e.g. .com, .company, .fr)

ISO maintains country codes (.fr, .us, .jp, ...)

DNS service distributed

Above functions done by IANA

Internet Assigned Numbers Authority



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Internet Service

Anyone can talk with anyone

Anyone can offer any service

As long as it runs over the Internet Protocol

As long as the standard Internet service is “good enough” for customers (not for regulators)

No permissions required

Might have local firewall issues, but the ‘Net will transport the packets

No application-specific payments to ISPs

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Internet Regulation

What Internet regulation?

In the U.S., the FCC refrained

Since telephone companies ignored the Internet

An overlay, not a new, network

“Experts”: does not/cannot work

Internet useless in the “real world”



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Internet Regulation Not Needed

No Local Monopolies (used to be the case)

Tariff regulations avoided by competition

Quality – no assumption of minimum required quality

Interconnection – bilateral peering arrangements between ISPs

Numbering – just allocating integers – no meaning

Naming – distributed control – trademark issues taken to court

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Internet: The Anti-Network

Everything that the telephone network was not

Flexible

Innovative

Enabling

Generative

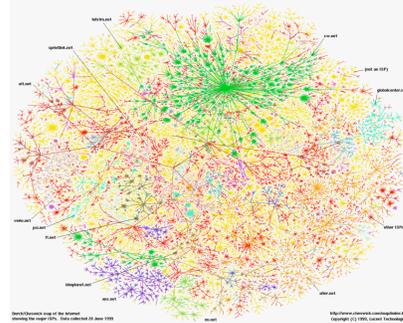
Distributed authority

Multiple ISPs in given area

(mostly) internationally seamless

(mostly) unregulated/ungoverned

Exceptions in some countries – e.g. China, England, ...



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Things changed

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The Internet became IT

Too big to ignore (or disbelieve)

The Internet is more than 5% of the world's GDP

Replacing all existing communication infrastructures

Far cheaper to build & operate

Scares the bejesus out of most governments

e.g. ISIS recruiting via slick social media programs

Scares the bejesus out of most traditional industries

Just ask the newspaper publishers



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Internet Standards

No standards for interconnection operations

Pair-wise ISP agreements

No standards for billing

Pair-wise ISP agreements

No standards for settlements

Pair-wise ISP agreements

Voluntary technical standards from IETF & W3C

Self organized – no specific government role

Ad-hoc technical standards from vendors



I E T F®



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Is this the answer?



Note: L2 \neq L3

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Internet Governance Cases

IANA function

ITU

Network neutrality

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IANA function

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IANA function

The 3 Internet coordination functions are performed by the Internet Assigned Numbers Authority (IANA)

- Record protocol values for IETF

- Allocate IP address blocks to regional registries

- Maintain root zone file for the domain name system

The IANA function is performed by the Internet Corporation for Assigned Names and Numbers (ICANN)

ICANN established in 1998 to do the IANA function



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White Paper



10 June '98: *Management of Internet Names and Addresses* (63 FR 31741)

“Statement of Policy”

*Internet stakeholders are invited to work together to form a new, **private, not-for-profit corporation** to manage DNS functions*

- 1) set policy for and direct **allocation of IP number blocks** to regional Internet number registries;*
- 2) oversee operation of the authoritative Internet **root server system**;*
- 3) oversee policy for determining the circumstances under which **new TLDs** are added to the root system; and*
- 4) coordinate the assignment of other Internet **technical parameters** as needed to maintain universal connectivity on the Internet.*

the new corporation could be funded by domain name registries, regional IP registries, or other entities identified by the Board.

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IANA Contract

ICANN used to be under contract from the U.S. National Telecommunications and Information Administration (NTIA) to perform IANA function

NTIA part of the Department of Commerce

U.S. “control” of the Internet long resented by many outside the U.S.

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ICANN-NTIA Contract

Translated into action items

The DoC signs off on any changes to the DNS root zone file

i.e., the file that lists the TLDs and of the IP addresses of the nameservers for each of the TLDs



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NTIA says “maybe”

Mar. 2014, NTIA said they might surrender control if specific conditions were met

Multistakeholder model, maintain stability of DNS, meet needs of IANA customers & maintain open Internet

Fight over IANA function shows assumption that the Internet is governed (by ICANN)

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IANA transition, contd.

Many in Congress did not want to “give away the Internet” – e.g., December 2014 budget bill:

None of the funds made available by this Act, may be used to relinquish the responsibility of the National Telecommunications and Information Administration during fiscal year 2015 with respect to Internet domain name function functions, including responsibility with respect to the authoritative root zone file and the Internet Assigned Numbers Authority functions.

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Giving Away the Internet!

Four states sue to stop internet transition

DONALD TRUMP COMES OUT AGAINST OBAMA'S UNITED NATIONS INTERNET TAKEOVER

Obama gives away the internet and, with it, our liberty

Obama Should Not Put Free Speech on Internet at Risk by Giving Up US Oversight

Don't give away the Internet's First Amendment, ALG President to testify to Senate Commerce Committee

Arguments Over Internet Governance Transition Get Even More Stupid



Cruz slams Obama for 'internet giveaway'



Cruz.Senate.gov

Republicans Say Obama Administration Is Giving Away The Internet

7 Days Before Obama Gives Away Internet & National Security

Judge denies block on Internet address transfer

A Federal Judge Just Let Obama Give Away The Internet

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Community Powers over ICANN

Reject ICANN Budgets, IANA Budgets or Strategic/Operating Plans.

Reject changes to ICANN's Standard Bylaws.

Approve changes to new Fundamental Bylaws, Articles of Incorporation and ICANN's sale or other disposition of all or substantially all of ICANN's assets.

Remove an individual ICANN Board Director.

Recall the entire ICANN Board.

Initiate a binding Independent Review Process (where a panel decision is enforceable in any court recognizing international arbitration results).

Reject ICANN Board decisions relating to reviews of the IANA functions, including the triggering of Post Transition IANA separation.

The rights of inspection and investigation

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IANA transition

NTIA/IANA Stewardship Transition Coordination Group formed in response to NTIA announcement

Reviewed proposals from the three communities (IETF, numbers & names) & produced a combined one

Combined proposal submitted to NTIA

NTIA said proposal met requirements

NTIA let contract expire on 1 October 2016

ICANN is now on its own

Note: if the transition had not happened – forces in the UN would likely have voted to take ICANN over

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ITU

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ITU

The International Telecommunications Union

U.N. treaty organization

the traditional home of telecommunications standards

Originally formed in mid 1800s

Standards voted on by “member states”

Imposed by regulation in some countries



Few ITU standards are relevant to the Internet

Not because they have not tried (or claim)

H.323 (voice over IP), Next Generation Network (NGN)

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ITU governance

Every now & then – meet to review treaties

World Conference on International
Telecommunications (WCIT) – 2012, previous in 1988

Every 4 years

Plenipotentiary Conference (PP) – next: 2018

Set overall ITU plan for next 4 years

World Telecommunication Standardization Assembly
(WTSA) – last: Oct. 2016

Set ITU-T structure and plan for next 4 years



Only governments “in the room”

Contribution driven

Thus not always controlled

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ITU & Internet

The ITU has long recognized that the Internet was
intruding on their traditional territory

e.g., shortly before PP-98 (1998)

IETF was approached about submitting IETF standards
to ITU-T for review

Every PP since have included proposals to take
over some or all of the Internet standards or
assignment functions

To date, all blocked, mostly by U.S. coordinated efforts

But some ITU-T contributions request this anyway

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Why Care?

ITU acts like a vote of the member states empowers it

Even over non government entities such as the IETF, W3C, RIRs & ICANN

Ambiguous legal picture in many countries

Revision of Internet settlement regulations could have significant impact on Internet business model

Putting Internet standards under government control could change nature of the standards

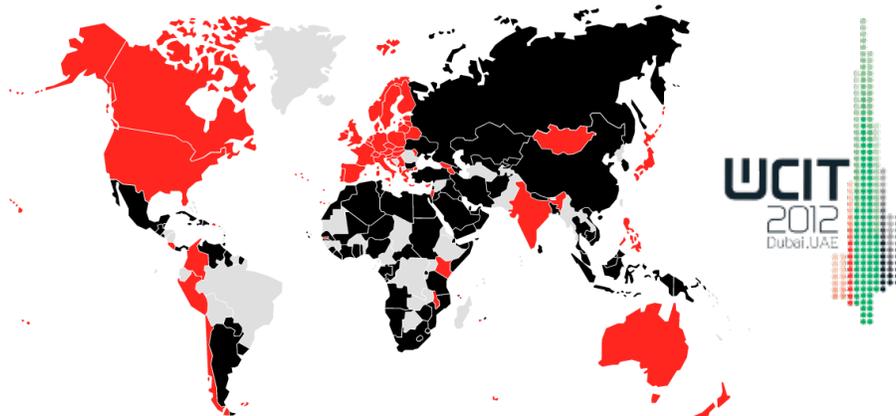
Protect incumbents, require backdoors, etc.

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WCIT 2012

Promise: consensus, no voting

Actual: vote to expand ITU role in Internet



Countries who did not sign resulting treaty in red

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PP 2014

Many submissions

E.g., from India

- redo addressing & naming to be country based
- take over Internet address & name policy development
- redo architecture to ensure internal traffic stays in-country
- record all Internet transactions
- develop new “secure, robust and tamper-proof protocols”

In the end, not adopted

After a lot of work (U.S. opinion less of a factor)



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ITU Feature

Taiwan does not exist

There is no telephone country code assigned for Taiwan



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ITU will be back, and back

The ITU membership will continue to want to get the ITU involved in Internet governance

Technical standards and more

The post-Snowden US has less moral authority to block such proposals – an ongoing threat



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Network Neutrality

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Overriding Issue

The Internet is replacing all existing telecommunications technologies

Existing technology-specific regulations OBE

Some regulations follow use

e.g., FCC did require ISPs to be able to wiretap

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Regulatory approaches

Openists

Net must be open to enable *innovation commons*

Require *network neutrality*

e.g., power grid does not favor toasters

To let people at edge/end innovate

Dumb pipe must be available & cost effective

Deregulationists

If 'network is property' carriers will innovate

Note: "property" specifically includes right to exclude

Network owner needs incentive to invest

Mandatory *smart pipe* OK

The Broadband Debate: A User's Guide - Tim Wu
<http://ssrn.com/abstract=557330>

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Carrier point of view

It's my wire, I'll do what I want with it

Edward E. Whitacre - CEO AT&T

'Google, Vonage & Skype are using my network for free'

William L. Smith - CTO Bell South

'We should be able to charge Yahoo to let their web page load faster than Google.'

Ignore fact that the customer bought the service in order to access Google, etc.

And service is more valuable because of Google & etc.

Pushing to charge sites for "better service"

Small step to making payment required for any useful transport (i.e., a protection racket)

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Network Neutrality

A neutral network is in the spirit of the original Internet end-to-end architecture

ISPs just transport packets without regard to who sent them, who is to receive them, or what is in them

Enables "permissionless innovation"

But the concept is foreign to traditional carriers
growing issue in U.S. & elsewhere

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Information Services

Telecommunications Act of 1996 created a class of “information services”

Not subject to FCC regulation

FCC used to say that ISPs were offering “information services”

ISPs were generally small and not part of telephone or cable providers at the time

Today, almost all residential Internet service is from a telephone or cable provider

ISPs generally respect the e2e principle

For companies, not residential service

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E2e Abuse

But some ISPs have abused e2e

Blocked VoIP (Madson River), degraded Bit Torrent (Comcast), degraded Netflix (Cogent), ...

And they all said they were not doing anything

So, calls for FCC to regulate to stop such abuse

Who trusts the carriers to act in the customer’s interest?

FCC has tried multiple times, always overturned in court

With good cause

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More Network Neutrality

Concept: ISPs should treat all Internet traffic equally

Not processing or charging differently because of some factor

e.g., a business relationship

But some ISPs want to be able to charge for “better” service

Only works if no payment means worse service

Or to block, or impede, competing services

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Common Carriage

An individual or business that advertises to the public that it is available for hire to transport people or property in exchange for a fee.

A common carrier is legally bound to carry all passengers or freight as long as there is enough space, the fee is paid, and no reasonable grounds to refuse to do so exist. A common carrier that unjustifiably refuses to carry a particular person or cargo may be sued for damages.

West's Encyclopedia of American Law,

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Common Carriage, contd.

Basic concept: treat customers consistently & fairly

Started with freight carriers

Extended to telecommunications in 1910

Mann–Elkins Act

Clarified for telecommunications carriers under Title II of the Communications Act of 1934

Title II extended to Internet service providers by FCC in Feb. 2015

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Title II

Title II is not network neutrality

Title II gives the FCC authority to require a neutral (or non-neutral) network

Title II also gives the FCC the authority to regulate every detail of an ISP & its service offerings

FCC says it will “forebear” on over 700 individual regulations

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Reaction

Carriers sued to block reclassification

FCC upheld in court - June 2016

New FCC chair proposing to reverse reclassification

FCC asked for comments

Got >9 million comments, mostly against

Posed to ignore most comments

Congress getting into the mix

House Energy & Commerce Committee wants to hold a
faceoff between companies pro & anti Title II

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Title II

Title II is awful

But the courts told the FCC that going the Title II
route was the only legal way to proceed

Unless Congress acted

Title II enables the worst kind of innovation-killing
regulation

The FCC has said they would not use most of the
power

But a future FCC could, or be forced by the courts to

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going dark

The FBI says they want laws to require back doors in all Internet applications

e.g., to counter Apple's iOS and iMessage locks

Tried using All Writs Act (1798) to force compliance - failed

So they can wiretap or get at contents

Never mind that they can not show any example where this would have made a difference

"a child will die" (they say)

Note: the real bad guys already have their own tools and are incented to hide

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Governance Issues

regulations, settlements, technology standards, peering, security, emergency use, espionage / monitoring, national boundaries, attribution, societal disruption, business disruption, trademark, copyright, operation of critical infrastructure, censorship, spam, have/have not balance, domain names, resource assignment policies, government roles, network neutrality, exchange point management, market dynamics, subsidies, competition, cybercrime, cyberwar, patents, identification, attribution, ...

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Governance issues, contd.

Include original ITC issues

Requirement for operator to be able to stop messages that
*“may appear dangerous to the safety of the State or which
 would be contrary to the laws of the country, public order or
 morality”*

E.g., U.S. Communications Decency Act (CDA)

Protect children by telling adults they can not talk like
 adults

Blocked by courts

Multiple tries at national and state level

Common in other countries

PS. Breaking news: Steve Bannon wants to
 regulate Google, Facebook ... like “utilities”

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Idealists

Some idealists say the Internet does not need
 governance

But some of them also admit that regulations may
 still be useful:

*“any company that handles Internet datagrams
 may not read or modify the content, nor infer
 intent or meaning for the purpose of deciding
 what datagrams to deliver or to not deliver”*

David Reed

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Review

No significant changes in the Internet governance picture (in about forever)

But we keep getting close to the cliff of government control of the Internet

At least a dozen times in the last dozen years

Will the cliff is always be there?

Likely

The Internet is now too important to leave to the people who know how it actually works

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Imagine the old AT&T bringing you the Internet?

OUR BEST VALUE

Advanced Internet	Advanced Internet Preferred	Advanced Internet Premier
\$59.99 Per month for 12 months Offer Details and Terms	\$69.99 Per month for 12 months Offer Details and Terms	\$81.99 Per month for 12 months Offer Details and Terms
100 Websites	150 Websites	250 Websites
FREE facebook	Variety Pak	Includes Shopping Sites
Spotify, FOX NEWS, YouTube, YAHOO!, Walmart	hulu, The New York Times, iTunes, WIKIPEDIA, NETFLIX, facebook	Craigslist, ebay, amazon.com, Peapod, LLBean
View Website Lineup	View Website Lineup	View Website Lineup
Order Now	Order Now	Order Now

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